DOCUMENT RESUME

ED 314 786 CS 507 005

AUTHOR Wilson, Alicia A.; Stohl, Cynthia
TITLE Participation and Performance: An Individual and Group Level Analysis.
PUB DATE May 89
NOTE 39p.; Paper presented at the Annual Meeting of the International Communication Association (39th, San Francisco, CA, May 25-29, 1988).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Communication Research; Group Dynamics; Group Experience; Group Membership; Groups; *Group Unity; *Interpersonal Communication; *Job Performance; Morale; *Organizational Communication; *Participation
IDENTIFIERS Group Characteristics; *Group Cohesion

ABSTRACT

A study examined the relationship between participation and performance in groups to determine whether increased communicative activity brought about through participation in groups resulted in the acquisition of specific types of organizational knowledge and increased motivation which positively affected performance. Subjects for the study were 107 members of 8 semi-autonomous workgroups employed by a continuous processing plant in a large midwestern community. The results at the individual level suggest that worker knowledge and level of motivation are significantly related to supervisor assessment of individual performance and autonomy. At the group level, the data indicate that knowledge and motivation are related to actual team performance, but minimally or negatively associated with assessments of team performance. (Seven tables of data are included; 36 references are attached.) (Author/KEH)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED314786

# Participation and Performance: An Individual and Group Level Analysis

Alicia A. Wilson
Department of Communication
Michigan State University
East Lansing, MI 48824-1212
(517) 353-8120

Cynthia Stohl
Department of Communication
Purdue University
West Lafayette, IN 47907
(317) 494-9107

Paper presented at the annual International Communication Association Convention, Organizational Communication Division, San Francisco, May 1989

CS507005

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Cynthia Stohl
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Participation and Performance:
An Individual and Group Level Analysis

This paper hypothesizes that the increased communicative activity brought about through the enactment of participation in groups results in the acquisition of specific types of organizational knowledge and increased motivation which positively affect both individual and group performance. The members of eight semi-autonomous workgroups were the participants in the study. The results at the individual level suggest that worker knowledge and level of motivation are significantly related to supervisor assessment of individual performance and autonomy. At the group level, the data indicate that knowledge and motivation are related to actual team performance, but minimally or negatively associated with assessments of team performance. Two complementary interpretations of these findings are discussed, and suggestions for future research provided.

# Participation and Performance: An Individual and Group Level Analysis

"Now I have a sense of independence. To a certain extent I can make my own decisions without running to a supervisor. I used to be told what to do and I wasn't supposed to ask why. Now I know why, and I do my work better because of it"

--employee talking about the benefits of a worker participation program (emphasis in the original; Kolodny, Johnston and Jeffery, 1983, p. 4).

Increasing involvement in participative programs is the cornerstone of organizational experience in the 1980s. Large investments in quality circle training, development of sociotechnical systems, creation of semi-autonomous workgroups, and other high involvement practices are illustrative of the American managerial belief in the potential of an informed and involved workforce. The numerous articles, books and conferences dealing with labor's response to these new managerial practices, as well as labor initiated quality of work life contract negotiations (see Kochan, Katz & McKersie, 1986) further indicate the widespread concern with participation within the American organizational context.

However, despite colorful anecdotal evidence and public affirmation that participation creates knowledgeable and informed workers who will greatly enhance organizational performance (see Fortune, Oct. 24, 1988) there is still a great deal of uncertainty concerning who actually benefits from a participatory system, how best to utilize participatory structures, the implications of structurating

new work units, and so forth. Indeed, much of this uncertainty stems from the equivocal and sometimes contradictory research findings related to the relationship between worker participation and organizational and individual outcomes (Miller & Monge, 1986). But there are other issues as well. For example, the synergistic role of the workgroup or team has not often been considered. Although there are a plethora of studies that look at the structural design of effective workgroups, few studies examine the effects of workgroup equivalents of individual level variables (for an innovative exception, see Blau & Alba, 1982). Thus, even when participation is shown to affect productivity it is unclear how it does so.

In this paper it is argued that in order to gain a clearer understanding of the relationship between participation and performance we must focus on the participative/communicative process itself and examine specific indicators and effects of that process. Specifically, this paper posits that the increased communicative activity brought about through the enactment of participation in groups may result in the acquisition of specific types of organizational knowledge and increased motivation which positively affect performance.

Although previous work on participation is built upon the premise that as employees across the hierarchy learn more about their jobs and the larger organizational system they will become more motivated and better performers within

the system (e.g., Locke & Schweiger, 1979; Lawler, 1986) empirical studies have not directly addressed this assumption at either the individual or the group level. This study is designed to test the hypothesized positive relationships among participatory practices, organizational knowledge, motivation and performance.

## The Participatory Process

Although the relationship between participation and performance is highly equivocal (see meta-analyses by Locke & Schweiger, 1979; Miller & Monge, 1986) a more consistent picture exists for the positive relationship between satisfaction and participation (Alutto & Acito, 1974; Driscoll, 1978; Pearson, 1987; Schuler, 1980). Nonetheless, in today's culture with American social concerns focused on the viability of social institutions (rather than a focus of entitlement issues as found in the 1950's - 1970's) there has been a resurgence of interest in productivity and performance issues (Wagner & Gooding, 1987). Managerial support for participation is rooted in the belief that participation increases worker's knowledge and motivation which results in better performance. A necessary condition of successful high involvement organizations of any type is expected to be highly knowledgeable and motivated employees (Lawler, 1986). In such systems, communication practices (e.g., team meetings, monthly notices, organizational wide seminars) are purposely designed to increase worker knowledge and motivation.

Locke and Schweiger (1979) propose that the mechanisms by which participatory decision making affects performance fall into two categories: cognitive and motivational. The cognitive component of the model, which is rooted in the changing patterns of communication associated with participation (Stohl, 1986), suggests that participation leads to more upward communication and better use of information which in turn leads to novel, creative solutions and enhanced performance. Further, the additional information workers gain through access to more and varied communication sources leads to better understanding of one's job and of decisions made within the organization (Stohl, 1986). The motivational component of the model suggests that increased motivation leads to greater ego involvement which results in less resistance to change, more acceptance of decisions, increased worker initiative and innovativeness, commitment, and involvement. In the next section we review the relevant research addressing these two components of participation and their relationship to worker and workgroup performance.

The Acquisition of Organizational Knowledge

We suggest that effective participation programs are organizational learning systems which facilitate discussion of work-related problems, organizational goals, procedures, and opportunities located outside of one's own workgroup. As Monge and Miller (1988) state "Participation is at heart a communication process" (p. 24). Past evidence suggests that

in changing the communicative experiences of workers and managers by facilitating participation within an organizational system, employees across the hierarchy learn more about their jobs and the larger organization (Kanter, 1977; Stohl, 1984, 1986; Wall & Lischeron, 1977). Stohl (1984) found that participants in a quality circle program knew and talked to more individuals throughout the plant and developed a broader perspective of the company operations than non-circle workers. Jenkins and Lawler (1981) found that workers allowed to participate in the development of a pay plan led to a better understanding of the new policy and its implications. Jackson (1983) found that the increase of communication which naturally accompanies an increase in participation in decision making led to a reduction of role ambiguity for the participants.

Generally, researchers have argued that workers involved in participatory programs will have more complete information about decisions and thus be better equipped to execute those decisions (Coch & French, 1948; Melcher, 1976), and that the workers will have a clearer understanding of the overall organizational system and thus a better view of how their actions affect the entire system (Frost, Wakely & Ruh, 1974). Lawler (1986) reports that in Cummins Engine, a high involvement system, the workers "can tell you the cost and other information that is normally the concern of management. In short, they care about their business and it pays off for Cummins" (p. 196). Overall, by

allowing workers to participate in decision making, it is argued that the organization can take advantage of a more complete information pool (Anthony, 1978; Frost, Wakely & Ruh, 1974), and the workers can obtain a more complete understanding of the policies and processes that make up the organizational system (Jenkins & Lawler, 1981; Melcher, 1976).

However, as the brief review above suggests although many researchers discuss the relevance and importance of organizational knowledge there are few studies that test these claims. Furthermore, almost all discussions of knowledge refer to individual knowledge systems. Yet, participation is often group-centered. Studies of group interaction strongly suggest that individuals and the group as a whole profit from the pooling of informational resources (McGrath, 1984). Thus we would expect workers' performance to be associated with their own levels of knowledge, and the overall level of the group's knowledge and group performance to be related to the level of knowledge available within its membership. This study explicitly tests the relationship between organizational knowledge and individual and workgroup performance in an attempt to determine whether or not increasing the foundation of worker knowledge does, in fact, "pay off" for organizations with participation programs.

$H_1$: Within a system wide participatory structure (i.e., semi-autonomous workgroups) levels of organizational knowledge are positively related to levels of individual performance.

$H_2$: Within a system wide participatory structure (i.e., semi-autonomous workgroups) the level of knowledge present within a group is positively related to group performance.

Specific Types of Organizational Knowledge

Clearly, however, not all information is equally as important nor necessarily relevant to worker and group performance. As Locke and Schweiger (1979) point out, participative decision making will only be effective and lead to an improvement in decision making performance if the knowledge obtained and utilized is relevant knowledge to the task. Ritchie (1974) concurs; when summarizing conditions moderating the effects of participation on various outcomes he notes that having the relevant skills and knowledge must be considered as a key factor. As such, a second purpose of the present study is to examine the relative effects of various types of knowledge on workers' performance.

One area that has directly focused upon specific types of knowledge is the study of organizational socialization. For example, Schein (1968) outlines several critical types of information workers must acquire during the socialization process. Among these are the basic goals of the organization, the expectations of the individual within the organization, and the basic responsibilities of the person in his/her given role. Wilson (1984) differentiates between formal organizational information (job descriptions, organizational assets, organizational policies) and informal information (norms, informal goals, expectations, and habits) arguing both are necessary to be effective

organizational members. Many additional researchers have generated similar lists (Feldman, 1976; Feldman & Brett, 1983; Louis, 1980).

In the participation literature Lawler (1986) argues that certain information is "crucial in helping the individual to identify with and care about the organization and hence to perform well" (p. 200). First, the individuals should have a good sense of how the organization is performing as a whole. Second, each individual should understand the operations, goals and objectives for the various areas throughout the organization, and for the organization as a whole. Third, the workforce should have access to financial information. Additional, relevant information includes (1) knowledge about new policies, (2) an understanding of acceptable priorities (e.g., quality over quantity, safety over production), or (3) key personnel that can be used as resources to provide needed information. Unfortunately, very little if any research has looked specifically at the relationships among different types of information and worker performance. The following research question is also explored in this study:

RQ1: What specific types of organizational knowledge are most related to individual and workgroup performance?

Motivation and Participation

Thus far we have examined the critical role of organizational knowledge in participatory processes. As suggested above, the second component of participation that is expected to be associated with performance is worker

motivation. In a meta-analysis of the relationship between participation and various outcomes, motivation was consistently found to be related to participation (Spector, 1986). Oldham (1976) reported significant correlations between motivation and work quality, work quantity, and work effort. It is important to note that the motivational advantages of groups on individual and group performance has also been clearly delineated (Cummings, 1978) in the literature.

Motivation, though difficult to define, generally is a label for the determinant of "(a) the choice to initiate effort on a certain task, (b) the choice to expend a certain amount of effort, and (c) the choice to persist in expending effort over time" (Campbell & Pritchard, 1976, p. 65). Although there are many sources of motivation, two broad categories of motivation strategies present in any organizational system are extrinsic and intrinsic motivators. Extrinsic motivation refers to "performing an activity because it leads to rewards external to, or independent of, the actual activity itself (e.g., money, praise, food, status, etc.)." In contrast, intrinsic motivation refers to desiring to be "a high performer because being a high performer is viewed as valuable for its own sake" (Cusella, 1988, p. 637). Although intrinsic and extrinsic motivators are important in any organizational system, participative systems in particular are most often

philosophically premised on the necessity of high levels of intrinsic motivation in the workforce.

Several programmatic research endeavors have established the positive relationship between motivation and job satisfaction (Hackman & Lawler, 1971; Hackman & Oldham, 1975; Warr, Cook & Wall, 1979). Locke and Schweiger's model of participation links motivation directly to productivity. Thus, we expect worker motivation will be positively related to individual performance and the performance of the workgroup.

$H_3$: Within a system wide participatory structure levels of individual motivation are positively related to levels of individual performance.

$H_4$: Within a system wide participatory structure levels of motivation present within the group is positively related to levels of group performance.

In summary, this study is designed to test the relationships between organizational knowledge, motivation, and performance. We have argued that the level of organizational knowledge and motivation of the workforce is enhanced through interaction throughout the organization across hierarchical and departmental boundaries, and these increases lead to better performance.

## Methods

### Research Site and Respondents

The organization under investigation is a continuous processing plant in a large, midwestern community. Approximately 260 people work at the plant which operates 24 hours a day, 365 days a year. Considered a "state-of-

the-art" plant, the plant operations are completely computerized. As such, the employees' (or technicians as they are called) tasks involved monitoring the systems, regular testing of the products, housekeeping, maintenance, and troubleshooting.

The plant's management functions are distributed throughout the plant's personnel in a Participative Management System which places the primary responsibilities of production and decision making on semi-autonomous workgroups (called teams). The technicians (n=190) are organized into fourteen primary teams ranging in size from eleven to seventeen. These teams have clear recognizable boundaries in terms of responsibilities, tasks and work areas. Only eight teams, however, deal directly with the production process (n=107). Table 1 presents demographic information on these teams. The other six technical teams are maintenance teams and will not be included in this study. The additional personnel (n=60) serve a variety of perimeter functions (e.g., lab analysis, administrative support, supplies distribution, product shipping and receiving) and are organized into groups but do not follow many of the structural guidelines set down for the formal teams.

Considered the basic unit in the plant, a team's role is to be self-reliant and self-managing, accountable for a whole task, and responsible for maintaining the attitudes and high performance levels of all the team members. Within

each team, the individuals are charged with similar roles; to be self-managing and motivating, responsible for a particular set of tasks within the team's task, and accountable for any mistakes or problems that occur within the assigned area. In addition to the more traditional physical production tasks assigned to each team, the teams are also responsible for performing their own timekeeping, making up within-group job assignments, recording quality control statistics, administering skills training for new members, and providing regular performance feedback for all members.

Measures

Organizational knowledge. The cognitive component of Locke and Schweiger's model was operationalized by developing an organizational knowledge inventory. This inventory was developed in concert with the Plant Operations Manager, Plant Personnel Manager, Assistant Personnel Manager, and the Plant Manager's Administrative Assistant. The 37 questions on the inventory reflect two relevant content areas identified by the management of the organization: production knowledge (e.g., cost per unit produced, production goals for the plant, cost of key raw ingredients; labelled PROKNOW), and general knowledge (e.g., various policies on smoking in the plant, vacation time, overtime pay, and key individuals such as the plant manager, operations manager, corporation president, area managers; labelled GENKNOW).

Motivation. Worker motivation was assessed by using the Internal Work Motivation part of the Job Diagnostic Survey (Hackman & Oldham, 1975). The scale contains six items rated on a seven point scale, including items such as "my opinion about myself goes up when I do this job well", and "I feel bad and unhappy when I discover that I have performed poorly on this job" (reverse coded). It should be noted that extrinsic motivators are present within the system but do not vary across the teams, thus the focus on level of intrinsic motivation.

Performance. Consistent with the plant's stated participatory management philosophy, two components of performance were evaluated. At the individual level these factors were autonomy (labelled INAUTO) and performance (labelled INPERF). Two members of the management team (i.e., supervisors who work directly with the teams) provided performance appraisals for each team member.

Autonomy refers to worker initiative and independence in completing production tasks. This factor encapsulates the normative processes embedded in the management system. That is, employees are expected to be able to work on their own, know appropriate procedures, make decisions without needing to go to the supervisor, and so on.

Performance refers to the overall individuals' productivity. This is the expected outcome for all employees. The system is predicated on the belief that autonomous workers are productive workers. However, because

group performance is the critical production unit, there were no actual production measures available on each worker so only supervisor evaluations were used at the individual level.

Group performance was evaluated in three ways: actual productivity (labelled PROD), ratings of team performance (labelled TMPERF), and of team involvement (labelled (TMINV). The actual production data represented the total number of pounds of product the team processed or produced each month. The two process areas (with four teams each), however, produce significantly different quantities by virtue of the point in the process; hundreds of thousands of pounds for four of the teams versus millions of pounds for the other four teams. To allow for comparison across the eight teams, percentage scores reflecting "actual monthly team production" divided by the "monthly team production goal" was computed individually for each of the eight teams. The relative goal attainment percentage data were subsequently converted to standard scores to permit comparisons across the two process areas.

The two other team performance indices were supervisors' evaluations of the team's involvement and performance. Paralleling the assessment of the individuals' autonomy, a team's involvement related to the processes by which management expects the team to be able to meet its goals. Member involvement in task forces, special interest work groups, production task forces, and so on are a

critical part of an effective team. Finally, assessments of a team's performance was based upon supervisors evaluation of the productivity of the team. This component was similar to the ratings done for individual performance.

## Results

### Individual-level Analyses

Hierarchical regression was employed to analyze the effects of the level of individual organizational knowledge and motivation on managerial assessments of individual performance and autonomy. Four regression equations were required for the analysis. In order to control for any variation in individual performance or autonomy due to amount of organizational experience, individual tenure in the organization was entered into each regression equation at step one.

Knowledge was entered into each equation at step two, followed by motivation. Although the causal ordering of knowledge and motivation may be debatable, in this study they were not correlated, however there is some evidence to suggest increasing work related knowledge increases levels of motivation (Lawler, 1986). Thus, knowledge was entered second into the regression equations followed by motivation.

The correlation matrix of the variables in all four regression equations is presented in Table 2. Table 3 summarizes the hierarchical regression results. The first two regression equations examined predictors of managerial assessments of individual autonomy. The first equation,

which regressed autonomy on organizational tenure, general knowledge, and motivation, was not significant at step one [F (1,91) = .178, N.S.]. General knowledge, entered at step two, resulted in a significant overall regression equation [F (2,90) = 5.52, p < .005], and accounted for a significant 11% of the variance. The overall regression equation remained significant at step three [F (3,89) = 3.69, p < .01]; however, motivation did not uniquely explain a significant amount of additional variance in autonomy.

The second equation regressed individual autonomy on organizational tenure, production knowledge, and motivation. As in the first analysis, the only significant predictor of autonomy was production knowledge, resulting in a significant overall regression equation [F (2,90) = 3.33, p < .04], but accounting for only 7% of the variance in autonomy.

The final two equations examined predictors of managerial assessments of individual performance. The first equation regressed individual performance on organizational tenure, general knowledge, and motivation. The overall equation at step one was not significant [F(1,91) = .07, N.S.]. The overall equation remained nonsignificant when general knowledge was entered at step two [F(2,90) = 2.87, N.S.]; however, general knowledge did account for a significant 6% of the variance in individual performance [F (1,90) = 5.67, p < .02]. The overall regression equation remained nonsignificant when motivation was entered at the

final step [F(3,89) = 1.89, N.S.]. The second equation regressed individual performance on organizational tenure at step one, production knowledge at step two, and motivation at step three. None of the variables were significant predictors of individual performance.

Although a large amount of variance in individual autonomy and performance is not explained in these equations, there still is a significant relationship between worker knowledge and supervisor assessment of worker behavior, thus supporting hypothesis 1. The degree to which workers are perceived to be able to put forth the necessary effort and procedures to accomplish the production tasks is clearly related to knowing about personnel and general policies throughout the plant ($r = .35$, $p < .001$), more so than being knowledgeable about production goals and issues specifically ($r = .26$, $p < .01$). In relation to the research question posited, though both production knowledge and general knowledge appear related to assessments of individual behavior, the data indicate that general knowledge about policies and personnel accounts for more of the variance in individual autonomy. In relation to assessments of individual performance, again we see a stronger relationship between general knowledge and individual performance ($r = .21$, $p < .05$), than between production knowledge and performance ($r = .06$, N.S.).

Finally, when considering the relationship between motivation and individual autonomy and performance, we find

that motivation does not account for a significant portion of the variance in either variable over and above that accounted for by level of organizational knowledge, nor is there a significant zero order correlation; as such hypothesis 3 is not supported. It would appear that how motivated the individual is does not impact the extent to which the individual is perceived to be either autonomous or productive.

Group-level Analysis

As with the individual level analysis, hierarchical regression was employed to analyze the effects of the overall level of knowledge and motivation present within the group on managerial assessments of team involvement and performance as well as on actual productivity. The overall level of knowledge and motivation was assessed by determining an average score for the teams for production knowledge, general knowledge, and motivation (see Blau & Alba, 1982 for a discussion of the validity of aggregate group variables). It should be noted that a group level analysis results in an accompanying unavoidable reduction in the sample size (n = 8). As such, the number of variables considered within any given regression equation was constrained, as was the probability of discovering significant equations. The six regression regressions computed paralleled those in the individual analysis; either general knowledge or production knowledge was entered first,

followed by motivation (tenure was excluded from this analysis due to the small sample size).

The correlation matrix of the variables in all six group level regression equations is presented in Table 4. The mean scores for group level knowledge and motivation is presented in Table 5. Table 6 summarizes the hierarchical regression results for the equations looking at effects on team productivity; Table 7 summarizes those regression results examining effects on assessments of team performance and involvement.

The first regression equation, which regressed team production on general knowledge of the group, and group motivation, was significant overall [$F$ (1,6) = 7.82, $p < .03$], and with general knowledge accounting for 57% of the variance in productivity. The overall regression equation was no longer significant at the second step [$F$ (2,5) = 3.68, $p < .10$]. The second equation regressed team productivity on the group's level of production knowledge, and motivation. The overall regression equation did not reach significance [F (2,5) = 3.19, N.S.]. It should be noted, however, that although not significant, level of production knowledge accounted for 30% of the variance in productivity [$F$ (1,6) = 2.63, $p < .15$], and level of motivation accounted for an additional 26% of the variance [F (1,5) = 2.92, $p < .15$]. As such, it appears that a large portion of the variance in team productivity can be

explained by the aggregated level of knowledge and motivation.

The third regression equation regressed team involvement on the team's level of general knowledge and motivation. The overall regression equation did not reach significance [F (2,5) = .65, N.S.], yet general knowledge and motivation accounted for 11% [F (1,6) = .75, p = .42] and 10% [F (1,5) = .60, p = .47] of the variance in team involvement respectively. Similarly, when team involvement was regressed on level of production knowledge and motivation, the equation did not reach significance [F (2,5) = 1.22, N.S.]; production knowledge and motivation-accounting for 18% [F (1,6) = 1.32, p = .29] and 15% of the variance respectively [F (1,5) = 1.11, p = .34].

The last two regression equations regressed the team's level of knowledge and motivation on assessments of team performance. Neither of the regression equations reached significance (see Table 7). In contrast with the effects of knowledge and motivation on actual team productivity, there is a much weaker relationship between knowledge, motivation and supervisory ratings of team performance.

The first regression equation supports hypothesis 2 when performance is operationalized as actual productivity. However, the results of the regression equations concerning assessments of team performance do not support hypothesis 2. Thus, the data suggest that knowledge is only related to hard production data. Similarly, team level of motivation is

only related to actual team production (r = .46, N.S.), thus there is only partial support for hypothesis 4. Interestingly, production knowledge is negatively correlated with both assessment of team involvement (r=-.48, N.S.), and team performance (r = -.42, N.S.). In addition, there is no relationship between level of general knowledge and perceptions of team performance. The data suggest that levels of motivation and knowledge are more closely related to actual productivity of the teams than to supervisor's ratings of the teams' performance and involvement.

## Discussion

The data presented in this paper suggest that the two component model of participation has a far better fit with actual production data than with supervisory evaluations of performance. For example, although individual knowledge is related to managerial perceptions of autonomy of those individuals, neither knowledge nor motivation are related to assessments of individual performance. At the group level, we find a strong relationship between knowledge, motivation and actual productivity, but in the realm of supervisory assessments there is no relationship between evaluations of group performance, general knowledge and motivation. Even more interesting is the emergence of a negative relationship between managerial assessments of team performance and production knowledge.

If we consider these cross-level findings in concert two complementary explanations emerge. The first we label

the "threat position", and the second the "expert position". Both explanations are communicative in nature, and suggest the need to move beyond the focus on discreet individual and group characteristics and focus more on the developing communication relationships that are the origin, process and outcomes of participatory structures.

Threat Position

There is a great deal of literature that discusses the importance of middle management support for participation programs to be effective (Bartlett, 1983). In brief, the argument suggests middle managers often do not support the idea of participation because they are threatened by the impending loss of power they perceive as inherent in participatory structures. Specific sharing of information that has heretofore been in the exclusive domain of management (e.g., production and business figures, long range goals) as well as granting workers the right to voice opinions and suggestions about critical organizational issues threaten middle managers' often already precarious positions. Hence, these managers may subtly sabatoge the participative system.

In our study, the data indicate supervisors' evaluation of knowledgeable groups (in production matters) is lower than their evaluation of less knowledgeable groups. At the individual level, there is no relationship. Perhaps at the individual level knowledge is not as threatening as when the knowledge is embedded within the group. A single

knowledgeable employee cannot impact the system too much, but a knowledgeable group has the potential to undermine, evaluate and supplant the supervisor. It is important to note that the negative effect of knowledge does not carry over into the realm of general knowledge about personnel and policies. These "knowledgeable" groups are evaluated positively. The two types of knowledge, however, are of very different natures: policy and personnel information is continually changing (in flux), whereas information about production goals and procedures is relatively stable. The distinction between stable and unstable knowledge has important communicative implications that lead us to the second explanation of the study's findings, the expert position.

Expert Position

Briefly, the expert argument suggests that workers in a participatory system must be motivated to update continually certain types of knowledge about the system if they are to remain a viable part of the system. Such a need requires continued or increased interaction with those individuals who have access to the new information (usually those higher in the hierarchy), and requests for information and verification of the new information may reinforce the traditional complementary relationships between managers, supervisors and workers. In contrast, if the knowledge base is stable (as in the case with production information), once

the group acquires it there is little need for further interaction.

Recall that the groups with higher levels of production knowledge were rated as less involved within the system as well as evaluated as poorer performers. These data suggest that there may be a basic contradiction within the system. That is, to be a viewed as a "good" team you must interact with the managers and supervisors, yet an increase in the critical knowledge base present within a given team decreases the need to communicate with the managers and supervisors. Thus as expertise increases the team is perceived less positively. This explanation helps inform the strong positive relationship between general knowledge and evaluations given to individuals by the supervisors. The acquisition of these types of procedural and personnel knowledge are predicated on the development of a positive relationship with the management team and requires continual interaction within these relationships.

Both the threat and expertise positions lead to a further implication of this study, that is implications for the legitimacy and validity of supervisory performance appraisals within participative systems. Both positions suggest supervisors are basing their evaluations on personal, subjective and perhaps unconscious rationales which go beyond the degree to which the group is actually productive. The nonexistence of any relationship between individual motivation and performance, or between tenure in

the organization and performance, is further indication of the confounding system. Specifically, workers are clearly told that motivation and productivity are the bases upon which they and their teams are being evaluated. The evidence suggests otherwise. As such, future research should examine more closely these communication relationships and activities and their impact of performance appraisals within a participatory system.

In summary, this study found a positive relationship among participation, knowledge, motivation and actual team performance. This evidence suggests that efforts made to increase worker knowledge and motivation are worthwhile actions for the organization. However, the lack of relationships among knowledge, motivation and supervisory ratings suggests that future research needs to more closely examine the nature and process of communication within those significant relationships. Clearly, knowledge and motivation do "pay off" in a participative system; the next step may well be in convincing supervisors that it pays off for them as well.

References

Alutto, J. A. & Acito, F. (1974). Decisional participation and sources of job satisfaction: A study of manufacturing personnel. Academy of Management Journal, 17(1), 160-167.

Anthony, W. P. (1978). Participative management. Reading, Mass.: Addison-Wesley.

Bartlett, J. B. (1983). Success and failure in quality circles. Cambridge, England: Employee Resource Center.

Blau, J. R. & Alba, R. D. (1982). Empowering nets of participation. Administrative Science Quarterly, 27, 363-379.

Campbell, J. P. & Pritchard, R. D. (1976). Motivation theory in industrial and organizational psychology. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 63-130). Chicago: Rand McNally College Press.

Coch, L. & French, J. R. P. Jr. (1953). Overcoming resistance to change. In D. Cartwright & A. Zander (Eds), Group dynamics: Research and theory (257-279). Evanston, Ill: Row, Peterson publ.

Cummings, T. G. (1978). Self-regulating work groups: A socio-technical synthesis. Academy of Management Review, 3(3), 625-634.

Cusella, L. P. (1987). Feedback, motivation and performance. In F. M. Jablin, L. L. Putnam, K. H. Roberts & L.W. Porter (Eds), Handbook of organizational communication: An interdisciplinary perspective (pp. 624-678). Beverly Hills: Sage.

Driscoll, J. W. (1978). Trust and participation in organizational decision making as predictors of satisfaction. Academy of Management Journal, 21(1), 44-56.

Feldman, D. C. (1976). A practical program for employee socialization. Organizational Dynamics, 5, 64-80.

Feldman, D. C. & Brett, J. M. (1983). Coping with new jobs: A comparative study of new hires and job changers. Academy of Management Journal, 2, 258-272.

Frost, C. H., Wakely, J. H. & Ruh, R. A. (1974). The Scanlon Plan for organization development: Identity, participation, and equity. East Lansing, Mich.: Michigan State University Press.

Hackman, J. R. & Lawler, E. E. (1971). Employee reactions to job characteristics. Journal of Applied Psychology, 55, 259-286.

Hackman, J. R. & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. Journal of Applied Psychology, 60(2), 159-170.

Jackson, S. E. (1983). Participation in decision making as a strategy for reducing job-related strain. Journal of Applied Psychology, 68(1), 3-19.

Jenkins, G. D. & Lawler, E. E. (1981). Impact of employee participation in pay plan development. Organizational Behavior and Human Performance, 28, 111-128.

Kanter, R. M. (1977). Men and women of the corporation. New York: Basic Books.

Kochan, T., Katz, H., & McKersie, R. (1986). The transformation of American industrial relations. NY: Basic Books, Inc.

Kolodny, H., Johnston, C., & Jeffery, W. (1983). Job design and sociotechnical systems. Ottawa, Ontario: Publications Distribution Centre, Labour Canada.

Lawler, E. E. (1986). High involvement management: Participative strategies for improving organizational performance. San Francisco: Jossey-Bass publ.

Locke, E. A. & Schweiger, D. M. (1979). Participation in decision making: One more look. In B. M. Staw (Ed), Research in organizational behavior, 1, 265-339.

Louis, M. R. (1980). Surprise and sensemaking: What newcomers experience in entering unfamiliar organizational settings. Administrative Science Quarterly, 25, 226-251.

McGrath, J. E. (1984). Groups: Interaction and performance. Englewood Cliffs, NJ: Prentice Hall.

Melcher, A. J. (1976). Participation: A critical review of research findings. Human Resource Management, 15(2), 12-21.

Miller, K. I. & Monge, P. R. (1986). Participation, satisfaction, and productivity: A meta-analytic review. Academy of Management Journal, 29, 727-753.

Monge, P. R. & Miller, K. I. (1988). Participative processes in organizations. In Goldhaber, G. M., and Barnett, G. A. (Eds), Handbook of organizational communication. Norwood, NJ: Ablex publ.

Oldham, G. R. (1976). Job characteristics and internal motivation: The moderating effect of interpersonal and individual variables. Human Relations, 29, 559-569.

Pearson, C. A. L. (1987). Participative goal setting as a strategy for improving performance and job satisfaction: A longitudinal evaluation with railway track maintenance gangs. Human Relations, 40(8), 473-488.

Ritchie, J. B. (1974). Supervision. In G. Strauss, R. E. Miles, C. C. Snow & A. Tannenbaum (Eds), Organizational behavior: Research and issues. Madison, Wis.: Industrial Relations Research Assoc.

Schein, E. H. (1968). Organizational socialization and the profession of management. Industrial Management Review, 9, 1-15.

Schuler, R. S. (1980). A role and expectancy perception model of participation in decision making. Academy of Management Journal, 23(2), 331-340.

Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation. Human Relations, 39(11), 1005-1016.

Stohl, C. (1984). Quality circles and the quality of communication. Transactions, International Association of Quality Circles, 6, 157-162.

Stohl, C. (1986). Quality circles and changing patterns of communication. In M. L. McLaughlin (Ed), Communication Yearbook 9 (pp. 511-531). Beverly Hills: Sage.

Strauss, G. (1955). An experiment in worker control over pacing. In W. Whyte (Ed), Money and motivation. New York: Harper.

Wagner, J. A., III, & Gooding, R. Z. (1987). Shared influence and organizational behavior: A meta-analysis of situational variables expected to moderate participation-outcome relationships. Academy of Management Journal, 30, 524-541.

Wall, T. D. & Lischeron, J. A. (1977). Worker participation: A critique of the literature and some fresh evidence. NY: McGraw-Hill.

Warr, P. B., Cook, J. & Wall, T. D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well being. Journal of Occupational Psychology, 52, 129-148.

Wilson C. E. (1984). A communication perspective on socialization in organizations. Paper presented to the annual meeting of the International Communication Association, San Francisco, CA.

Table 1
Team Demographic Information

| Team | Male/Female | Ave. Organizational Tenure | Ave. Team Tenure |
|---|---|---|---|
| 1 | 10/2 (n=12) | 8.13 years | 7.99 years |
| 2 | 12/2 (n=14) | 7.68 years | 6.39 years |
| 3 | 10/2 (n=12) | 6.20 years | 6.19 years |
| 4 | 12/2 (n=14) | 6.74 years | 5.99 years |
| 5 | 13/2 (n=15) | 8.16 years | 7.53 years |
| 6 | 10/1 (n=11) | 7.93 years | 7.59 years |
| 7 | 12/2 (n=14) | 8.42 years | 7.87 years |
| 8 | 13/2 (n=15) | 7.71 years | 7.59 years |

Table 2
Correlation Matrix of Individual level Variables in the Regression Equations[a]

| Variable | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (1) GENKN | 1.00 | .43[d] | .01 | .35[d] | .21[b] | .15 |
| (2) PROKN | | 1.00 | .00 | .26[c] | .06 | .21[b] |
| (3) MOTIV | | | 1.00 | .07 | .00 | -.09 |
| (4) INAUTO | | | | 1.00 | .58[d] | .03 |
| (5) INPERF | | | | | 1.00 | .02 |
| (6) ORGTEN | | | | | | 1.00 |

[a]N = 93
[b]Correlation significant at p < .05.
[c]Correlation significant at p < .01.
[d]Correlation significant at p < .001.

Table 3
Summary of the Hierarchical Regression Analysis on Individual Autonomy and Individual Performance[a]

| Step | Variable Entered | Beta at Step of Entry | $R^2$ Change | Overall Regression R | $R^2$ | df | F | p |
|---|---|---|---|---|---|---|---|---|
| (Equation 1, DV = INAUTO) | | | | | | | | |
| 1 | ORGTEN | .044 | .002 | .044 | .002 | 1,91 | .18 | N.S. |
| 2 | GENKN | .331 | .107[b] | .331 | .109 | 2,90 | 5.52 | .01 |
| 3 | MOTIV | .038 | .001 | .333 | .111 | 3,89 | 3.69 | .01 |
| (Equation 2, DV = INAUTO) | | | | | | | | |
| 1 | ORGTEN | .044 | .002 | .044 | .002 | 1,91 | .18 | N.S. |
| 2 | PROKN | .265 | .067[b] | .263 | .069 | 2,90 | 3.33 | .04 |
| 3 | MOTIV | .035 | .001 | .265 | .070 | 3,89 | 2.24 | N.S. |
| (Equation 3, DV = INPERF) | | | | | | | | |
| 1 | ORGTEN | .028 | .000 | .028 | .000 | 1,91 | .07 | N.S. |
| 2 | GENKN | .246 | .059[b] | .245 | .060 | 2,90 | 2.87 | N.S. |
| 3 | MOTIV | -.006 | .000 | .245 | .060 | 3,89 | 1.89 | N.S. |
| (Equation 4, DV = INPERF) | | | | | | | | |
| 1 | ORGTEN | .028 | .000 | .028 | .000 | 1,91 | .07 | N.S. |
| 2 | PROKN | .041 | .002 | .049 | .002 | 2,90 | .11 | N.S. |
| 3 | MOTIV | -.005 | .000 | .049 | .002 | 3,89 | .07 | N.S. |

[a]N = 93
[b]This variable accounts for a significant ($p < .05$) increase in explained criterion variance.

Table 4
Correlation Matrix of Group level Variables in the Regression Equations[a]

| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| (1) GENKN | 1.00 | .54 | .40 | .33 | .05 | .75[c] | .19 |
| (2) PROKN | | 1.00 | -.08 | -.42 | -.48 | .55[b] | .17 |
| (3) MOTIV | | | 1.00 | .41 | .12 | .46 | -.36 |
| (4) TMINV | | | | 1.00 | .79[c] | .27 | -.09 |
| (5) TMPERF | | | | | 1.00 | .17 | -.42 |
| (6) PROD | | | | | | 1.00 | -.44 |
| (7) AVORGTEN | | | | | | | 1.00 |

[a]N = 8
[b]Correlation significant at p < .07
[c]Correlation significant at p < .01

Table 5
Team Knowledge, Motivation, Performance, Involvement and Productivity Scores

| Team | GENKN[a] | PROKN[b] | MOTIV[c] | TMPERF[d] | TMINV[d] | PROD[e] |
|---|---|---|---|---|---|---|
| 1 | 14.30 | 1.10 | 5.08 | 3 | 3 | -.32 |
| 2 | 14.50 | 1.21 | 5.26 | 4 | 3 | -.08 |
| 3 | 13.67 | 1.44 | 5.24 | 3 | 2 | +.07 |
| 4 | 14.93 | 1.00 | 5.59 | 4 | 5 | +.41 |
| 5 | 14.93 | 2.07 | 5.30 | 2 | 2 | +.16 |
| 6 | 13.75 | 1.00 | 5.15 | 4 | 4 | -.44 |
| 7 | 14.29 | 1.36 | 5.35 | 3 | 3 | -.35 |
| 8 | 15.29 | 2.00 | 5.22 | 4 | 4 | +.63 |

[a]Indicates average number of questions correct out of 19.
[b]Indicates average number of questions correct out of 4.
[c]Indicates average response on a 7 point scale.
[d]Indicates supervisor rating on a 5 point scale.
[e]Indicates standardized productivity score.

Table 6
Summary of Hierarchical Regression Analysis on Team Productivity[a]

| Step | Variable Entered | Beta at Step of Entry | $R^2$ Change | R | Overall Regression $R^2$ | df | F | p |
|---|---|---|---|---|---|---|---|---|
| (Equation 1) | | | | | | | | |
| 1 | GENKN | .752 | .566[b] | .752 | .566 | 1,6 | 7.82 | .03 |
| 2 | MOTIV | .189 | .030 | .772 | .596 | 2,5 | 3.68 | N.S. |
| (Equation 2) | | | | | | | | |
| 1 | PROKN | .552 | .305 | .552 | .305 | 1,6 | 2.63 | N.S. |
| 2 | MOTIV | .508 | .256 | .749 | .561 | 2,5 | 3.20 | N.S. |

[a]N = 8
[b]This variable accounts for a significant ($p < .05$) increase in explained criterion variance.

Table 7
Summary of Hierarchical Regression Analysis on Team Involvement and Team Performance*

| Step | Variable Entered | Beta at Step of Entry | $R^2$ Change | Overall Regression R | $R^2$ | df | F | p |
|---|---|---|---|---|---|---|---|---|
| (Equation 1, DV = TMINV) | | | | | | | | |
| 1 | GENKN | .332 | .110 | .332 | .110 | 1,6 | .75 | N.S. |
| 2 | MOTIV | .339 | .096 | .454 | .206 | 2,5 | .65 | N.S. |
| (Equation 2, DV = TMINV) | | | | | | | | |
| 1 | PROKN | -.425 | .180 | .425 | .180 | 1,6 | 1.32 | N.S. |
| 2 | MOTIV | .387 | .149 | .574 | .329 | 2,5 | 1.23 | N.S. |
| (Equation 3, DV = TMPERF) | | | | | | | | |
| 1 | GENKN | .056 | .003 | .056 | .003 | 1,6 | .02 | N.S. |
| 2 | MOTIV | .121 | .012 | .124 | .015 | 2,5 | .04 | N.S. |
| (Equation 4, DV = TMPERF) | | | | | | | | |
| 1 | PROKN | -.477 | .227 | .477 | .227 | 1,6 | 1.76 | N.S. |
| 2 | MOTIV | .087 | .008 | .485 | .235 | 2,5 | .77 | N.S. |

*N = 8